



**MULTI PLATFORM VIRTUAL ENVIRONMENT WITH STANDARD JAVA  
(FORMERLY VIRTUAL ENVIRONMENT ON THE WEB)**

CORRECTION WITH CORRECTION MARKINGS



*1a. Prior version*

~~VIRTUAL ENVIRONMENT ON THE WEB~~

*1a. Current version*

**MULTI PLATFORM VIRTUAL ENVIRONMENT WITH STANDARD JAVA**

U.S. Patent Application of:

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## BACKGROUND-DESCRIPTION OF PRIOR ART

### 3. *Prior version*

Surfing on the ~~web~~ is generally accomplished using a browser to view web pages that uses conventional user interfaces. The controls are usually limited to standard user interfaces comprising buttons, checkboxes, combo boxes, and other conventional user interface elements.

~~Commercial e-commerce sites use said common interfaces to interact with users. Said users use interfaces to purchase goods and services.~~

### 3. *Current version*

Surfing on the Internet is generally accomplished using a browser to view web pages that uses conventional user interfaces. The controls are usually limited to standard user interfaces comprising buttons, checkboxes, combo boxes, and other conventional user interface elements.

Virtual reality games have been around for many years. Many of these games are multi-player games that can use computer networks and allow several users to interact. However, they use fat/thick client structure in which users have to obtain a special software, then install and execute the special software in their computers. Due to its complexity, the size of this kind software is usually very big, which is not convenient for users, especially those with slow Internet connection. Moreover, downloading and running software from questionable sources may be a security risk/harmful. Additionally, many versions of the special software have to be built to support various operating systems (Windows 98, Windows NT, Linux, Mac OS) and hardware platform (PC, Macintosh, Console).

United States Patent No. 6,268,872 discloses a Virtual Reality environment representation with VRML. Although VRML technology provides means for displaying a virtual reality user interface, it requires a special browser or browser plug in to be functional. User should download and install the special browser or browser plug-in first, and in a networking environment the user may not be able to do it without a special

authorization from the network administrator. Moreover, the VRML data files are usually huge and users with slow Internet connection will not be able to view the virtual reality interface conveniently.

United States Patent No. 6,426,752 discloses a game device permits generation of images of objects moving through a virtual space. Although this technology provides means for displaying a virtual reality user interface, it requires a special game device to be functional.

This patent application describes a system to display virtual reality websites or virtual reality environment with standard Java (applets). Since Java is a widely-accepted standard in many platform and has built-in security system, the system described in this patent application allows the development of safe cross-platform virtual reality environments without any other proprietary software plug-in. Any computer system with the ability to connect to a network (including the Internet) and run a Java-enabled browser can view virtual reality websites or virtual reality environments developed using the system described in this patent application.

## SUMMARY OF THE INVENTION

### *4. Prior version*

The primary object of the invention is to provide a system that allows people to surf the ~~net~~ Internet using a virtual reality user interface without having to download proprietary software or plug-ins.

Another object of the invention is to create an e-commerce website that uses virtual reality user interface.

Another object of the invention is to create virtual environments on the Internet.

In accordance with the present invention a system comprises computer programs residing on a computer-readable medium includes instruction for causing the system to:

- (a) display virtual reality interface.
- (b) react to user's command.
- (c) open other web pages.
- (d) invoke other functions, applications or web services.

### *4. Current version*

The primary object of the invention is to provide a system that allows people to surf the Internet using a virtual reality user interface without having to download proprietary software or plug-ins.

Another object of the invention is to create an e-commerce website that uses virtual reality user interface.

Another object of the invention is to create virtual environments using Java applets on the Internet.

In accordance with the present invention a system comprises computer programs residing on a computer-readable medium includes instruction for causing the system to:

- (e) display virtual reality interface.
- (f) react to user's command.
- (g) open other web pages.
- (h) invoke other functions, applications or web services.

## Objects and Advantages

### 5. Prior version

~~This invention has some advantages over traditional web surfing techniques: more fun to use and easier to visualize.~~

### 5. Current version

This invention has some advantages over traditional fat-client approach of displaying a virtual reality environment:

1. user does not need to obtain or download and execute a client-side program
2. user does not need to run or execute a client-side program that can be a security risk.
3. this invention uses JAVA which has a built-in security system and possesses virtually no security risk.
4. this invention uses JAVA which is a widely accepted standard and can be run by virtually any computer system with the appropriate hardware and a Java virtual machine.

Moreover, this invention has some advantages over VRML approach of displaying a virtual reality environment:

1. user does not need to install a special browser or browser plug-in to display a virtual reality environment built with methods described in this patent application.
2. depending on the number and the size of its textures, a website with a virtual reality environment built with methods described in this patent application can be made much smaller and/or require much less computational power than the VRML approach.

**BRIEF DESCRIPTION OF THE DRAWINGS**

The foregoing features and other aspects of this invention will now be described in accordance with the drawings in which:

Figure.1 is a diagram of the suggested application and requirement or configuration of the system for general uses.

Figure.2 is an activity diagram, showing the basic features of the system.

## DETAILED DESCRIPTIONS OF THE PREFERRED EMBODIMENTS

Detailed descriptions of the preferred embodiment are provided herein. It is to be understood, however, that the present invention may be embodied in various forms. Therefore, specific details disclosed herein are not to be interpreted as limiting, but rather as a basis for the claims and as a representative basis for teaching one skilled in the art to employ the present invention in virtually any appropriately detailed system, structure, or manner.

### *6. Prior version*

Referring now to Figure. 1, The system comprises a web server (30) and a database server (20) with a database (10). Said web server (30) provides HTML files (50). Map data and link data (60) as dynamic data (52) can be embedded to said HTML files (50) or downloaded from said database server (20) by web application (51). Said web server (30) sends said HTML files (50) via network (40). Said HTML files (50) with web application (51) is displayed using web browser (70).

### *6. Current version*

Referring now to Figure. 1, The virtual environment system proposed in this patent application comprises a web server (30) and a database server (20) with a database (10). Said web server (30) provides HTML files (50). Map data and link data (60) as dynamic data (52) can be embedded to said HTML files (50) or downloaded from said database server (20) by web application (51). Said web server (30) sends said HTML files (50) via network (40). Said HTML files (50) with web application (51) are displayed using web browser (70). HTML pages that can be displayed with said system comprise regular html pages comprise user verification (75) and user interaction (76) and html pages running the virtual environment system and displaying various kinds of websites comprising E-Commerce websites (72), On-line game websites (73), or even common websites (74).



The sample source code and/or object code and database files included with the patent application uses Java applets and scripts on the client side and ASP server-side scripts/codes running on a web server on the server side. When a user accesses a website built with the proposed system, the server-side codes build a web page dynamically by including a reference to the Java applets and dynamically embedding all the data required by the applet, comprising map data and link data (which are different for each part/area of a virtual environment). The Java applets access the dynamically created embedded data to create and display the virtual environment and do not need to communicate with the server anymore until the user accesses another part of the virtual environment.

Referring now to Figure.2, The system starts running when a user open a browser window (110). Said system then shows a virtual reality user interface and ready to receive commands (120) from said user.

Said commands comprise description commands (130), navigation commands (140), and link commands (150).

The system responses to said description commands (130) by displaying relevant comments (131).

The system responses to said navigation commands (140) comprise forward command (141), backward command (142), left command (143), and right command (144).

Said forward command (141) causes user to move forward (145).

Said backward command (142) causes user to move backward (146).

Said left command (143) causes user to turn left (147).

Said right command (144) causes user to turn right (148).

Said link commands (140) comprise new window command (151) and old window command (155).

Said new window command (151) displays a link as a new window (152).

Said old window command (155) displays a link in the current window (156).

If the user assigns a close window command (162), the system will close the browser window and end the process. Otherwise (161), the system is ready for the next command.

## CLAIMS

What is claimed is:

### *7. Prior version*

1. A method for displaying a virtual reality environment on the ~~web~~ comprising the steps of:
  - (a) downloading virtual reality web application;
  - (b) downloading virtual environment data;
  - (c) displaying virtual reality environment using a browser;whereby a user can use any operating system to display the virtual environment.

### *7. Current version*

1. A method for displaying a virtual reality environment with standard Java on the Internet comprising the steps of:
  - (a) downloading virtual reality web application;
  - (b) downloading virtual environment data;
  - (c) displaying virtual reality environment using a browser;whereby a user can use any operating system that has the capability to connect to the Internet and run a Java-enabled Internet browser to display the virtual reality environment.

8. *Prior version*

2. A system for building web sites or web services ~~with virtual reality environment~~, comprising:
  - (a) general web sites;
  - (b) e-commerce web sites;
  - (c) online-game web sites;

8. *Current version*

2. A system for building Java-based virtual reality environment enabled web services and/or web sites, comprising:
  - (a) general web sites;
  - (b) e-commerce web sites;
  - (d) online-game web sites;

9. *Prior version*

3. The system of claim 2 wherein further comprising virtual reality hardware interfaces;
  - ~~(a) first means [input devices] for acquiring input from users;~~
  - ~~(b) second means [output devices] for displaying information;~~

9. *Current version*

3. The system of claim 2 wherein further comprising virtual reality hardware interfaces, comprising virtual reality input device such as virtual reality gloves and movement sensors and virtual reality out device such as tactile output and 3D display;

*10. Prior version*

4. A computer program product having a computer readable medium having computer program logic recorded thereon, as a part of the system of claim 1, comprising means for ~~displaying virtual reality environment~~; means for building virtual reality web sites or virtual environment; ~~and means for delivering the virtual environment via Internet.~~

*10. Current version*

4. A computer program product having a computer readable medium having computer program logic recorded thereon, as a part of the system of claim 1, comprising means for using server-side script and/or code to build HTML pages embedded with map data and display a representation of the map data as a virtual reality environment via the Internet using standard Java; means for building and displaying virtual reality web sites or virtual reality environments with standard Java using texture mapping;

*11. Prior version*

5. The computer program of claim 4 wherein said program further comprises means ~~for a conversation-like password verification system~~ for user verification.

*11. Current version*

5. The computer program of claim 4 further comprises means for using a conversation-like password verification system for user verification

*12. Prior version*

6. The computer program of claim 4 wherein said program further comprises ~~means~~ [an interaction system] for allowing multiple users to interact each other.

*12. Current version*

6. The computer program of claim 4 wherein said computer program further comprises an interaction system for allowing multiple users to interact each other.

*13. Prior version*

7. The computer program of claim 4 wherein said program further comprises ~~means [an interaction system]~~ for allowing a user to assign a virtual entity to represent said user.

*13. Current version*

7. The computer program of claim 4 wherein said computer program further comprises an interaction system for allowing a user to assign a virtual entity to represent said user.

#### *14. Current version*

##### **HARDWARE/SOFTWARE REQUIREMENTS**

The patent application included a CD with all the source code and/or object code and the entire database files required to build the virtual environment described in it. To run the application, all the files should be uploaded into a server just like other Internet applications. The active server pages (.asp) codes require a Windows server (running PWS or IIS) with database capability or other kind of servers running the appropriate software to run the asp codes and access the database files. The easiest way to do it is by using an FTP program to upload all the files to a directory in a server (preferably a Windows server with asp and database capability). Once all the files are online, any computer system capable to run a browser with Java virtual machine can view the website by accessing the Internet address associated with the directory. Another way to do it is by configuring our own server by installing the required components (IIS for NT and PWS for Windows 98) and then copies all the files into the server directory. We can run the software in that server with a browser by accessing IP address 127.0.0.1. A virtual environment built with the proposed architecture can be viewed at <http://www.acella.com/cns/website/supermarket/>.

##### **ABSTRACT OF THE DISCLOSURE**

#### *15. Prior version*

A system for ~~building and displaying~~ virtual reality environment over a network (including the Internet). The virtual reality environment comprises general web sites, e-commerce web sites, and game web sites.

#### *15. Current version*

A system for using standard Java to build and display virtual reality environment over a network (including the Internet). The virtual reality environment comprises general web sites, e-commerce web sites, and game web sites.